 

**Appendix 2**

**Enhancing vegetable value chains in rice-based and sole crop production systems to improve farm household income and consumer access to safer vegetables in Morogoro, Tanzania**

**Project Inception Workshop Report**



May 2012

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# LIST OF ABBREVIATIONS

AVRDC Asian Vegetable Research and Development Centre

DALDO District Agriculture and Livestock Development Officer

FARM Food and Agriculture Research Management

GDP Gross Domestic Product

IITA International Institute of Tropical Agriculture

IMF International Monetary Fund

SUA Sokoine University of Agriculture

USDA United States Department of Agriculture

WB World Bank

WEO World Economic Outlook

# EXECUTIVE SUMMARY

The inception workshop on enhancing vegetable value chains in rice-based and sole crop production systems to improve farm household income and consumer access to safer vegetables was organized by AVRDC-The World Vegetable Center and hosted by Sokoine University of Agriculture (SUA). The workshop was held at Nashera Hotel, Morogoro, Tanzania, on 11th May, 2012 and was attended by 23 partners/stakeholders from AVRDC, International Institute of Tropical Agriculture (IITA), Africa Ricer Center (AfricaRice), Sokoine University of Agriculture, Tropical Pesticide Research Institute (TPRI), International Food Policy Research Institute (IFPRI), Sugarcane Research Institute Kibaha, St. Johns University, Horticultural Training Institute (HORTI)-Tengeru, Ohio State University (OSU) and District Agricultural and Livestock Development Officer (DALDO) for Kilombero and Mvomero districts.

Participants shared their experiences on farmer field approaches, sample selection (Division, ward and villages), and methodologies which were based on projects they were participated before. Some of the recommendations that were identified by the participants included:

• Identification of two districts in the Morogoro region suitable for the project

(Mvomero and Kilombero) – Appendix III.

• The proposed sample size for socioeconomic survey will be 180 - 250 households in the two districts. Sample size per district will be based on volume of production.

• It was proposed that, the production volumes of individual vegetable and rice crops should guide the sample size determination. Samples should thus be collected from locations that are noted for producing higher quantities of the vegetables and rice producing communities of the Morogoro region.

• The sampling of respondents should include both vegetable-rice intercrop producing and non-vegetable-rice intercrop (vegetable sole crop) producing communities.

• Logistics and distance from Morogoro town to the selected villages should be considered since some of the villages are too far from the district centers and from other villages.

• Villages with different population densities will be selected in accordance with the levels of rice-vegetable production systems in the 2 districts (i.e., Kilombero district should have 60% of respondents while Mvomero district should target have 40% of survey respondents since the latter contributes higher to the rice and vegetable food basket of the region).

• Project Set-up

1. Budget per project partner was outlined. Detailed allocation to be done at activity level and resources pooled by partners for joint activities where necessary to efficiently optimize the use of resources given short span (6 months duration) of the project, ending on September 2012.
2. Allocation of budgets at activity level for socio-economic surveys and food safety analysis should encompass overall value chain of vegetables within different production systems.

iii. Identifying field problems for example vegetable diseases and how they spread and handled, misuse of chemicals (pesticides, herbicides) and improper washing of the vegetable.

• Questionnaire for the study to be completed by the end of May, 2012

• Data collection to start early June and to be completed by the end of June, 2012

• In July, 2012 data entry, clean-up and analysis

• In August, 2012 report writing

• September, 2012 report submission and closing workshop

• It was agreed that the key project tasks as per the set objectives and activities to be

considered are:

i. On farm assessment of farming systems, households and vegetable diseases

ii. Consideration of production side factors

iii. Consideration of market side factors

iv. Identification of success factors that can ensure that partners can work together to cut down operational costs.

v. Consideration of consumption trend of households

• DALDOs from both districts will be key resource persons in the exercise especially to assist in identification of villages, household and also connecting the research teams with the local authorities in the respective areas

• In the assessment of pests, diseases and heavy metal contamination of tomato and egg plant, the total samples of 250 will be collected.

i. Pesticides /Heavy metals are important elements to be analyzed from the samples to be collected from the markets (fruits [1kg] and water [1L] used to wash vegetables) at National, Regional, District, Division, Ward and Village Market. For this activity TPRI will take the lead for this task.

ii. Plant pathogens to be collected at the field.

iii. For testing and analyzing human pathogens, 3 fruits will be taken from each selected market. SUA and Ohio State University will take a lead for this task.

iv. Sample collection 20% to be collected during production June, 2012, and 80% to be collected in August

v. Both final technical and financial reports by sub-grantee were to be

completed by end of September, 2012. Actual reporting schedule would be

specified in sub-agreements intended to be sent to partners within 1 week.

• Indicators of the project impact to the rural people/selected villages should reflect direct to the outcome/improvement of the farmer livelihood. This was underscored by Dr. Christopher Legg (IFPRI) and Prof. Mateete Bekunda (IITA) who participated in the workshop provided inputs to the success of the workshop as well.

• Plans for increasing awareness creation and closing workshop in September, 2012

1. Participating in National Agricultural show to be held in Morogoro (Nane-

Nane) show to create awareness.

1. Production of leaflets to facilitate awareness creation to be considered as a

key option.

iii. Producing policy briefs to suggestion to relevant government bodies for example Reduction/cut off custom duty/fees for farmer’s products

1. Sending phone SMS to farmers, educate farmers through radio and television

to be facilitated by DALDOs.

# Background and justification

The number of people in sub-Saharan Africa suffering from chronic hunger and malnutrition was estimated to be 265 million or 31% of the population in 2009 (FAO 2009[[1]](#footnote-1)). The majority of the poor and food insecure are smallholder farmers and rural villagers, particularly women and children who are further affected by malnutrition and micronutrient deficiencies. Lack of dietary diversity is a key causal factor since populations consume mainly staples as their main foods which are high in carbohydrates but low in nutrients and vitamins. Vegetables in general, and traditional African vegetables (TAVs) in particular, are rich in micronutrients and other health-promoting phytochemicals and so these nutrient-dense vegetables provide an excellent means to complement staples for better nutrition as well as to increase incomes. The high climate diversity in Tanzania offers suitable environments for vegetable production in highland, midland and lowland areas, thus making it possible to produce temperate, sub-tropical and tropical vegetables. Vegetables can either be cultivated as main crop or adapted to cereal based cropping systems and grown in association (mixed cropping) during the cereal crop season or in rotation during the fallow season, or as relay crop during the transition periods preceding or succeeding the cereal season.

Increasing vegetable production efficiencies in Tanzania will also increase smallholder farmer income and access of farm households and consumers to improved nutrition. Globally important vegetables such as tomato and sweet pepper are appropriate targets for sustainable intensification in urban production systems as they are highly nutritious and of high market value. Increasingly, these vegetables are being consumed as fresh product and therefore they need to be free from not only chemical but also biological contaminants. Chemical contaminants result from misuse of pesticides applied to control pests and diseases and through use of dirty water or fertilizer inputs (such as municipal waste), applied to address production constraints. Biological contaminants i.e. human pathogens (Salmonella, E. coli), result from a lack of sanitation during handling or washing of vegetables. These fruit-borne contaminants pose a significant threat to consumer health and jeopardize market opportunities.

This first phase focuses on the Morogoro region in Tanzania, an FtF Tanzania target region for development of horticultural value chains for both rural and urban markets, including Dar es Salaam. It is characterized by coastal climate with temperatures ranging from 19 oC (min) to 30 oC (max), a mean annual precipitation of 854 mm, and an altitude range of 366-549 m. Rice is a major staple in this region and is usually produced as a single crop per year under rain-fed conditions with a production cycle of 3-6 months. Many paddy fields are left fallow during the off-season. Rotation, relay or intercropping rice with vegetables is a mutually beneficial farming system. Vegetables can make use of residual water after rice has been harvested and can be complemented with drip irrigation if required. To enable targeted intervention activities of vegetables grown in association with rice, there is a need to map out mixed rice-vegetable cropping systems as well as household food consumption patterns in the project area.

Major production constraints in the target region are poor quality of seeds, intermittent drought, changing rainfall pattern, low soil fertility and insect pests and diseases. Major diseases and insect pests for tomato include late blight, Fusarium wilt, white flies, nematodes and begomoviruses while Fusarium and Verticillium wilt affect African eggplant. Farmers lack skills (knowledge and technical support) on integrated pest management to sustainably combat these constraints in order to maintain high production levels. AVRDC in close collaboration with Tanzania’s Horticultural Research and Training Institute (HORTI-Tengeru) and other researchers in the public and private sectors recently released nine new high-yielding, multiple-disease-resistant and nutrient-dense vegetables, including seven TAV cultivars that could be introduced to overcome pest and disease constraints in the field, and potentially obliviate the risk of some inappropriate pesticide applications. There are also several bottlenecks along the marketing value chain, including food safety issues, which need to be understood and addressed if farmers are to achieve higher returns on investment from vegetable production.

Stakeholders from research, extension and regulatory agencies will for the first time work together to optimize microbial and chemical detection protocols to quantify the scale of contamination and to select and disseminate appropriate management practices. Methods and approaches developed by Horticulture CRSP Immediate Impact.

Project (IIP) in Nigeria will be implemented in the Morogoro region of Tanzania and technical links will be nurtured with IPM CRSP-IPDN, IPM CRSP-IPM and BMZ recently funded projects in Tanzania. Socio-economic surveys of the project will focus on two globally important vegetables (tomato and sweet pepper) and two TAVs (amaranth and African eggplant) while lab based food safety analyses will focus on tomato and African eggplant. The project will build on expertise and results from other HortCRSP projects in East Africa. In addition, project follow-up activities will be closely linked with the HortCRSP post-harvest center to be established at AVRDC premises in Arusha.

# Objective, output and activities

The overall long-term objective for the full project is more productive/intensified and sustainable rice-vegetable production systems along with improved access for smallholder farmers to markets, leading to diversified and increased household income from vegetables and enhanced nutritional security from safer vegetables, of particular importance to pregnant women and young children. This first ‘jump-start’ phase of the project will lay the foundation to achieve the overall long-term objective by identifying specific major production and market constraints of rice-vegetable production systems, characterization of production sites and consumption patterns, conduction of pilot studies on food safety analysis to increase consumer awareness of vegetable safety . Furthermore, focus will be to build new strategic partnerships by engaging all relevant stakeholders and research and development actors to refine intervention strategies and the design of pilot activities for future projects.

The following outputs and activities are planned for the first phase:

1. *Baseline data on production and market constraints of vegetables as intercrop with rice or as sole cropping system and food safety analysis with vegetable supply chain actors*.

A baseline study will be conducted using participatory appraisal approaches through surveys and complemented by stakeholder consultations. Information will be gathered on production, post-harvest and marketing constraints and food safety issues through stratified random sampling of different value chain actors (i.e., seed and other input dealers, producers, middlemen, wholesalers, retailers and consumers). Results would be used to understand knowledge, perceptions and practices of farmers and market vendors regarding food production, safety and associated plant health and marketing constraints. Interventions will be assessed through technology dissemination systems and gender issues related to production and marketing.

1. *Characterization of rice-vegetable based production sites and consumption patterns of representative rural and urban households in the target region*.

Major rice-vegetable based production sites will be mapped and characterized to estimate the relative prevalence and performance of existing mixed crop production systems. Food consumption patterns would also be mapped and characterized to determine diet diversity and relative prevalence, composition and frequency of vegetables in diets. Such information will be used to develop dietary intervention strategies.

1. *On farm assessment of the incidence of pests and diseases for tomato and African eggplant*.

Evaluation of the incidence of pests and diseases through visual assessment supported by laboratory analysis using cultural, ELISA and other diagnostic tests with particular focus on common and damaging diseases (Ralstonia solanacearum, Phytophthora infestans, nematodes and viruses). Integrated pest management methods identified to overcome production constraints that do not result in contamination and reductions in safety of vegetables produced.

1. *Analysis of microbial, pesticide and heavy metal contamination of market and farm samples of tomato and African eggplant*.

Fifty samples each of tomato and African eggplant will be collected from farmers’ fields and the selected markets (plus samples of wash water) for laboratory analysis of pesticides and heavy metals at TPRI according to standardized protocols (250 samples in total). Fruits will be evaluated visually for quality, packaged, kept cool in transport and tested for human pathogens using methods developed by Ohio State University at Sokoine University of Agriculture. Methods to reduce contamination at markets will be identified and disseminated.

1. *Stakeholder workshops to develop strategic partnerships, evaluate results through participatory learning, action research and outcome mapping tools to refine intervention strategies*.

An inception workshop will actively engage participation of representatives of all identified stakeholders in the production and marketing chain vegetable production systems as well as research and development actors to build new partnerships. A summary workshop will discuss the results of the value chain baseline study, levels of biological and chemical contaminants and develop and disseminate intervention strategies.

# Workshop process

The facilitators started off the process by giving an outline on how the workshop would be conducted and key issues that would be addressed following the draft agenda organized by AVRDC. The facilitator welcomed participants to share best approaches and practices and suggests on how vegetable value chains in rice-based and sole crop production systems will improve farm household income and consumer access to safer vegetables.

The presenter started by explaining importance of agriculture in Tanzania and how agriculture helps people to get out of hunger and poverty. Food supply chain in Tanzania is very complex and disorganized sold under 5 markets which are Local village market, Regional market, National markets, Export market and supermarket. Studies and work have being done for the development under the African rice programs to help people get out of hunger and alleviate household poverty. Through this research project the Tanzanian government will benefit in improving rural livelihood in rice-vegetable farming systems and the project will start in December 2012.

Challenges facing agriculture in Tanzania were:

• Organization of production is poor (input supply in most areas of rural Tanzania is poor).

• Lack of good marketing systems, connecting farmers to the market.

• Poor infrastructures. Rural African roads can be pretty rough on vehicles, as many a broken shock absorber can testify.

• Lack of quality control systems like grading and packing materials and

• Pest and diseases in some areas of Tanzania.

# Comments and questions

The following are questions/comments which were asked /given by the participants during the inception workshop on the enhancement of the vegetable value chains in rice-based and sole crop production systems to improve farm household income and consumer access to safer vegetables.

*Comment one*

Vegetable is highly consumed in Tanzania and the consumption differs according to the ethnic group and or regions. There are two types of vegetables, exotic and indigenous vegetable. For example exotic vegetable includes cabbage and indigenous vegetable includes amaranthus, spider plant, mwidu etc.

Indigenous vegetable need to be taken into account as it contains extremely nutritious, providing a cheap substitute for meat than exotic vegetable in rural areas. Amaranthus is creating a new industry, particularly for small peri-urban farmers.

*Comment Two*

Site selection should base on data collection, size of the farm where farmers use pesticides, and type of pesticides, quality of the water used to wash vegetable. Relevant site for the study should be Kilombero and Mvomero districts (Appendix III).

*Question One*

How much data on production and consumption of tomato on national level are available?

*Response*

Some data are available for 2003; currently there is no data on district, divisions, wards and villages levels.

*Question Two*

Pesticide usage, what relationship farmers have with pesticide industry?

*Response*

Not sure if members use pesticides and the extent of use if they use. Chemical industries do conduct training on how to use chemicals to farmers and effect of underutilization or overutilization of the chemicals.

*Question Three*

When does tomatoes produced in Tanzania especially in the targets sites?

*Response*

Usually tomatoes comes to the market at the end of rain season (because during rainy season tomato diseases are high) they start planting in the month of June and they harvest in August.

*Question Four*

Which areas of the Mvomero district are producing rice and vegetable?

*Response*

The area which produces rice is Mvomero, Mlali produce vegetable; Mlali and Doma produce mix of vegetable and rice.

*Question Five*

Are there any statistics of rice and vegetable production in Kilombero and Mvomero?

*Response*

There is no any statistics known so far.

# Two groups break up sessions namely (i) socio-economics for project activities 1 and 2 and (ii) food safety analysis for project activities 3 and 4 groups were created. The working group met to refine responsibilities and timelines after which a general session was used to harmonize various activities and timelines for the project as a whole.

# An end of project workshop (Activity 5) was proposed for the 3rd week of September with September 21st being set as a tentative date to reflect on lessons learnt and strengthen build partnerships for a possible larger phase of the project.

# Closing Remarks by AVRDC (Project Lead)

Dr. Afari-Sefa appreciated the valuable contribution and committed of participants. He further explained that enhancing vegetable value chains in rice-based and sole crop production systems will improve farm household income and consumer will access to safer vegetables.

# Appendix I: Workshop Agenda

|  |  |
| --- | --- |
| **TIME** | **ACTIVITY/TOPIC** |
|  | **Thursday, 10th May 2012** |
| *18:30 – 20:30* | ***Cocktail Reception at Nashera Hotel*** |
|  | * Welcome participants incl. self introductions (Mishili, SUA) * USAID FtF Africa RISING Project Consultations process and Expectations (Rusike, IITA)   (Informal presentations) |
|  | **Friday, 11th May2012** |
| 8:30  8.45  9.05  9.25 | ***Session1: Chair: Fulgence Mishili (Sokoine University of Agriculture)***   * Overview of vegetable production systems in rice intercrop and sole crop production systems and potential study sites in Morogoro (Mishili, SUA) * Workshop introduction, Jumpstart Project objectives, activities & partner roles (Afari-Sefa, AVRDC / Beed, IITA) * Partner budgets, sub-agreements and reporting timeframe & requirements (Afari-Sefa, AVRDC, Beed, IITA) * Discussion / Comments |
| *10:00* | ***Tea/Coffee Break*** |
| 10:30  11.30  12.00 | ***Session 2: Chair: Chris Ojiewo (AVRDC)***   * Site selection for socio-economic surveys, characterization of rice-vegetable production systems an farm/market samples for food safety assessment (Mishili, SUA/ Representative form DALDO – Morogoro) * Facilitated open discussion: Approaches for socio-economic surveys (Afari-Sefa, AVRDC) * Facilitated open discussion: Approaches for food safety assessment (Beed, IITA) |
| *12:30* | ***Lunch break*** |
| 13:30  14.30  14.50  15.10 | ***Approaches/Group work plan refinement (Session3): Chair: Jonne Rodenburg (AfricaRice)***  **Working group discussion to fine tune work plan**   * Clarify activities by partner and what each lead * Detail outputs by partner * Detail outputs by activity * Determine needs per activity * Determine feasibility of activities and timeline   **Group 1:** Socio-economic surveys: Site selection, characterization of production systems, sampling, implementation etc. (Afari-Sefa, AVRDC)  **Group 2:** On farm and laboratory assessment of pests, diseases and heavy metal contamination of tomato and African egg plant (Beed, IITA)   * Presentation of group 1 (Activities 1&2) action plans (Group Lead) * Presentation of group 2 (Activities 3&4) action plans (Group Lead) * Open discuss: Harmonization of socio-economic survey and food safety assessment work plans and time frame |
| *15:40* | ***Tea/Coffee Break*** |
| 16:00  16:30  17.00 | ***Partner responsibilities, timelines and future plans (Session 4): Chair: John Msuya***   * Discussion: Key responsibilities/timelines/reporting schedule   (Afari-Sefa, AVRDC)   * Discussion: Plans for increasing awareness creation and closing workshop in September 2012 (Afari-Sefa, AVRDC / Beed, IITA) * Wrap up and closing remarks (Afari-Sefa, AVRDC) |
| *19:00 – 20:30* | ***Joint Dinner (location to be determined)*** |
|  | **Saturday, 12th May 2012** |
| 8:30 | * Optional field visit to selected rice-vegetable field in Morogoro (Mishili, SUA) |
| 10:30 | * Departure |

# Appendix II: List of participants

|  |  |  |  |
| --- | --- | --- | --- |
|  | Name | Institution | E-mail |
| 1 | Fen Beed | IITA | f.beed@cgiar.org |
| 2 | Mary Maganga Ntangalo | IITA | mnntangalo@yahoo.com |
| 3 | Delphina Mamiro | Sokoine University of Agriculture (SUA) | delphimamiro@yahoo.com |
| 4 | Nessie Luambano | Sugarcane Research Institute-Kibaha (SRI) | nluambano@yahoo.com |
| 5 | Omari S. Said | Kilombero District Council - Rep. DALDO | - |
| 6 | Don Lotter | St. John's University/HORT CRSP | [dlotter@sjut.ac.tz](mailto:dlotter@sjut.ac.tz) |
| 7 | Elias Richard Mgembe | Sokoine University of Agriculture (SUA) | [emgembe@yahoo.com](mailto:emgembe@yahoo.com) |
| 8 | Mateete Bekunda | IITA | [M.Bekunda@cgiar.org](mailto:M.Bekunda@cgiar.org) |
| 9 | Danny Coyne | IITA | [d.coyne@cgiar.org](mailto:d.coyne@cgiar.org) |
| 10 | Julius Emil Mkenda | Tropical Pesticides Research Inst. (TPRI) | [jmkenda@gmail.com](mailto:jmkenda@gmail.com) |
| 11 | Sanja Ulic | The Ohio State University | [ILIC.2@osu.ed](mailto:ILIC.2@osu.ed) |
| 12 | Chris Ojiewo | AVRDC - The World Vegetable Center | [chris.ojiewo@worldveg.org](mailto:chris.ojiewo@worldveg.org) |
| 13 | Silvest N. Samali | HORTI Tengeru | [silivesta@yahoo.com](mailto:silivesta@yahoo.com) |
| 14 | Bakari Kaoneka | Tropical Pesticides Research Inst. (TPRI) | [kaonekab@yahoo.com/ bkaoneka2012@gmail.com](mailto:kaonekab@yahoo.com) |
| 15 | Victor Afari-Sefa | AVRDC - The World Vegetable Center | [victor.afari-sefa@worldveg.org](mailto:victor.afari-sefa@worldveg.org) |
| 16 | Paul Kiepe | Africa Rice Centre | [p.kiepe@cgiar.org](mailto:p.kiepe@cgiar.org) |
| 17 | Paul M. Kusolwa | Sokoine University of Agriculture (SUA) | [kusolwap@gmail.com](mailto:kusolwap@gmail.com) |
| 18 | John Msuya | Sokoine University of Agriculture | [j\_msuya@yahoo.com](mailto:j_msuya@yahoo.com) |
| 19 | Melanie Lewis Ivey | The Ohio State University | [ivey.14@osu.edu](mailto:ivey.14@osu.edu) |
| 20 | George A. Mhina | Mvomero District Council - DALDO | [grgmhina@yahoo.com](mailto:grgmhina@yahoo.com) |
| 21 | Jonne Rodenburg | Africa Rice Centre | j.rodenburg@cgiar.org |
| 22 | Christopher Legg | IFPRI | [christopher.legg@blueyonder.co.uk](mailto:christopher.legg@blueyonder.co.uk) |
| 23 | Fulgence Mishili | DAEA-SUA | [fmishili@gmail.com](mailto:fmishili@gmail.com) |

# Appendix III: Proposed research sites





1. WHO. 2009. Global prevalence of Vitamin A deficiency in populations at risk 1995-2005. World Health Organization database on Vitamin A deficiency. Geneva [↑](#footnote-ref-1)